Patent Claims

1. An X-ray detector for a CT device, comprising:

a phosphor layer, adapted to generate electromagnetic radiation as a function of an occurrence of X-radiation; and

a photodetector layer, adapted to detect electromagnetic radiation generated by the phosphor layer, wherein the phosphor layer includes ceramic material and the photodetector layer is joined to the phosphor layer, and includes organic material.

2. The X-ray detector as claimed in claim 1, wherein the ceramic material is at least one of Gd_2O_2S and $CdWO_4$.

3. The X-ray detector as claimed in claim 1, wherein the organic material is a mixture of p-type polyparaphenylene-vinylene (PPV) and n-type fullerene-phenyl-C61-butoxy-methoxine (fullerene-PCBM).

4. The X-ray detector as claimed in claim 1, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

5. The X-ray detector as claimed in claim 4, wherein the intermediate layer includes a polymer.

6. The X-ray detector as claimed in claim 5, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

7. The X-ray detector as claimed in claim 1, wherein a bottom electrode is provided and includes an oxide.

8. The X-ray detector as claimed in claim 7, wherein the oxide is indium-doped tin oxide (ITO).

9. The X-ray detector as claimed in claim 1, further comprising a top electrode, joined to the photodetector layer.

10. The X-ray detector as claimed in claim 9, wherein the top electrode includes at least one of a metal and a metal alloy.

11. The X-ray detector as claimed in claim 9, wherein the top electrode includes a conductive polymer.

12. A CT device comprising the X-ray detector as claimed in claim 1.

13. A process for producing an X-ray detector for a CT device including a phosphor layer, useable to generate electromagnetic radiation as a function of the occurrence of X-radiation, and a photodetector layer, useable to detect generated electromagnetic radiation, comprising:

producing the phosphor layer from a ceramic material; and

applying the photodetector layer, made from an organic material, to the phosphor layer via at least one of spinning processing, printing processing, beam/jet processing and sticking the photodetector layer on the phosphor layer as a film.

14. The process as claimed in claim 13, further comprising:

polishing a surface of the phosphor layer before applying the photodetector layer.

15. The process as claimed in claim 13, further comprising:

applying an intermediate layer to the phosphor layer via at least one of spinning processing, printing processing, beam/jet processing and sticking the photodetector layer on the phosphor layer as a film, before applying the photodetector layer.

16. The X-ray detector as claimed in claim 2, wherein the organic material is a mixture of p-type polyparaphenylene-vinylene (PPV) and n-type fullerene-phenyl-C61-butoxy-methoxine (fullerene-PCBM).

17. The X-ray detector as claimed in claim 2, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

18. The X-ray detector as claimed in claim 3, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

19. The X-ray detector as claimed in claim 16, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

20. The X-ray detector as claimed in claim 17, wherein the intermediate layer includes a polymer.

21. The X-ray detector as claimed in claim 20, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

22. The X-ray detector as claimed in claim 18, wherein the intermediate layer includes a polymer.

23. The X-ray detector as claimed in claim 22, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

24. The X-ray detector as claimed in claim 19, wherein the intermediate layer includes a polymer.

25. The X-ray detector as claimed in claim 24, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

26. The X-ray detector as claimed in claim 7, further comprising a top electrode, joined to the photodetector layer.

27. The process as claimed in claim 14, further comprising:

applying an intermediate layer to the phosphor layer via at least one of spinning processing, printing processing, beam/jet processing and sticking the photodetector layer on the phosphor layer as a film, before applying the photodetector layer.

28. An X-ray detector, comprising:

means for generating electromagnetic radiation as a function of an occurrence of X-radiation, including a phosphor layer; and

means for detecting electromagnetic radiation generated by the phosphor layer, including a photodetector layer, wherein the phosphor layer includes ceramic material and the photodetector layer is joined to the phosphor layer, and includes organic material.

29. The X-ray detector as claimed in claim 28, wherein the ceramic material is at least one of Gd_2O_2S and $CdWO_4$.

30. The X-ray detector as claimed in claim 28, wherein the organic material is a mixture of p-type polyparaphenylene-vinylene (PPV) and n-type fullerene-phenyl-C61-butoxy-methoxine (fullerene-PCBM).

31. The X-ray detector as claimed in claim 28, further comprising:

an intermediate layer, arranged between the phosphor layer and the photodetector layer and joined to the phosphor layer and to the photodetector layer.

32. The X-ray detector as claimed in claim 31, wherein the intermediate layer includes a polymer.

33. The X-ray detector as claimed in claim 32, wherein the polymer is polyethylene-dioxy-thiophene-polystyrene sulfonate (PEDOT-PSS).

34. A CT device comprising the X-ray detector as claimed in claim 28.